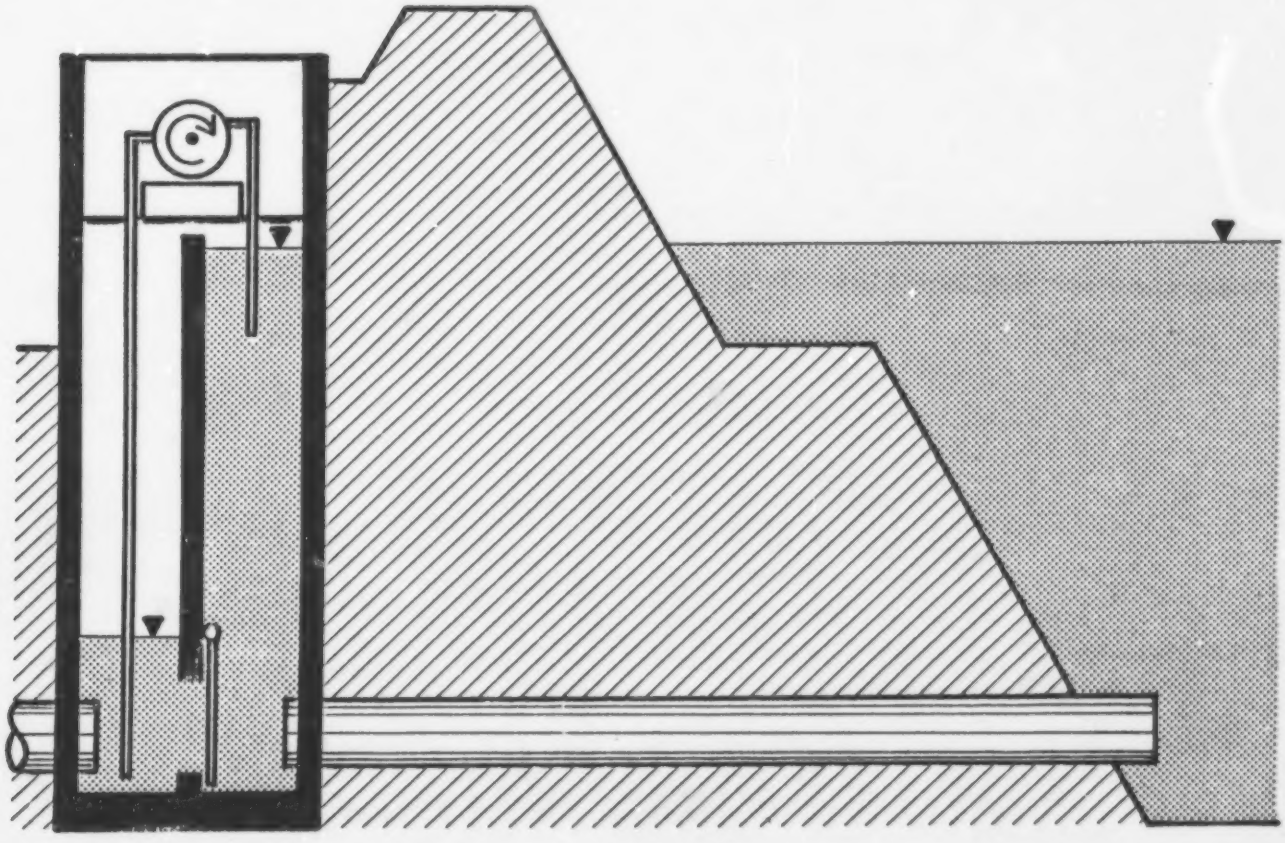
THE ANNUAL REPORT

OF THE

DYKING COMMISSIONER

•FOR THE YEAR ENDING DEC. 31, 1986•



SUBMITTED TO:

The Hon. LEONARD HARAPIAK
Minister
Department of Natural Resources

SUBMITTED BY:

F. PENNER P. Eng.
Dyking Commissioner

Manitoba

Natural Resources

Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

April 13, 1987

File: 11.1.5

The Honourable Leonard E. Harapiak
Minister of Natural Resources
Room 118, Legislative Building
450 Broadway Avenue
Winnipeg, Manitoba
R3C 0V8

Dear Sir:

I have the privilege to submit, herewith, the Thirty-Fifth Annual Report of the Dyking Commissioner as required under Section 15 of the Dyking Authority Act.

This report covers the appraisal of the Greater Winnipeg Dyking System and ancillary Pumping Stations for the 1986 calendar year, to determine it's adequacy to provide flood protection for the City of Winnipeg.

Please note that the Act does not require this report to be tabled in the Legislature.

Yours truly,

F. Penner, P. Eng.
Dyking Commissioner

Encl.

THIRTY-FIFTH ANNUAL REPORT
OF THE
DYKING COMMISSIONER
FOR THE YEAR ENDING DECEMBER 31, 1986

PREPARED BY:

F. Penner, P. Eng.
Dyking Commissioner

Winnipeg, Manitoba
April, 1986

ACKNOWLEDGEMENTS

Evaluation of the adequacy of the dyking system is based to a large extent on the data provided by the staff and personnel employed by the City of Winnipeg and the University of Manitoba. Their co-operation in providing annual reports and technical advice is gratefully acknowledged.

The Dyking Authority Act of 1952

The Dyking Authority Act D110, passed in 1952, was intended to ensure that the dykes and pumping stations constructed subsequent to the 1950 flood were maintained in a state of readiness to combat future floods. In fact, the full title of the Act is "An Act to Provide for the Maintenance of Dykes and Pumping Stations in Greater Winnipeg".

While authority and control over dykes and pumping stations was vested with the city or rural municipality in which they were situated, provision was made for the appointment of a Dyking Commissioner with powers to inspect dykes and pumping stations and to order work to be undertaken to maintain an integrated system of flood defences as well as to establish the location of the line of defence.

The Dyking Commissioner was required to "before the first day of April in each year, make to the Minister a report on the administration and carrying out of the provisions of this Act during the year ending on the thirty-first day of December next preceding the making of the report, and on the condition of the dykes, pumping stations, and pumps, and their sufficiency for the purposes for which they were constructed or installed".

Changes Since 1952

Several major changes have taken place since the passing of the Act in 1952.

1. The Red River Floodway, Portage Diversion and Shellmouth Dam projects have been completed.

2. Urban development has taken place beyond the lines of flood defence established earlier.

3. The five cities and two rural municipalities subject to the Act have been replaced by a single city.

4. The Canada - Manitoba Flood Damage Reduction Agreement has produced an Interim Flood Risk Map designating Flood Risk Areas and Floodways in the City of Winnipeg and has defined certain criteria for developments dictated by flood levels.

Current Issues

These changes and other considerations have given rise to the following issues:

1. The flood defence lines as currently established need revision to recognize the reality of the Floodway and recent urban development.

2. The Dyking Authority Act needs to be updated in two general areas:

    1. Its area of jurisdiction, that is, the geographical area and municipalities to which it applies, needs to be clarified.

    2. The standards for primary dykes need to be specified preferably by regulation under the Act.

3. In his 1985 report the Dyking Commissioner noted the last major flood fighting operation in the City occurred in 1966 and recommended a one or two day "extreme flood workshop" for staff from the City and provincial government departments to ensure an awareness of the probability and nature of an extreme flood.

4. While the Dyking Commissioner considers the above issues to be important and to require action, he does not consider them of greater importance than the ongoing routine maintenance of pumping stations and gate chambers.

Current Action On Issues

The current status of action to resolve these and other issues is as follows:

1. The City is reviewing the Primary Dyking System for redesignations and possible extensions. Surveys of several redesignations areas and possible extensions have been completed. Plans being prepared and will be submitted to the Dyking Commissioner for approval. A number of preliminary proposals have been reviewed with the Commissioner as noted in the City of Winnipeg report in Appendix C. However the pace of this work needs to be increased.

2. The City reports progress on outlining responsibility for the Turnbull Drive Dyke although this dyke does not fall within the jurisdiction of the Dyking Authority Act.

3. The City has also reviewed the adequacy of its flood pumping stations and made plans to address identified deficiencies.

4. Discussions between the City and the Province respecting amendment to Manitoba Regulation 9/85 (Floodproofing criteria) continue.

5. The City has initiated a project to prepare updated maps of the primary dykes.

6. The City has responded to the proposal for an extreme flood workshop by agreeing to recommend to the Board of Commissioners, the assembly of a steering committee.

7. The City has prepared a pamphlet "The Dyke Behind Your Home is Your Friend". While this deals primarily with secondary dykes, it has some relevance to the primary dykes as well.

8. The City has expressed interest in the Floodway operating rules. Copies of the rules will be sent to the City. It would seem that a meeting between the Water Resources Branch and the City to discuss these rules would be in order. At issue seems to be a desire on the part of the City of achieve some increased benefit from the Floodway at moderate river flows.

9. The current program to translate provincial statutes into the French language provides an opportunity to update the Dyking Authority Act. Hence the Department of Natural Resources has drafted revisions which will be discussed with the City, the University of Manitoba and others as appropriate.

Inspection of Facilities

The City and the University have ongoing inspection and maintenance programs.

I have been impressed with the degree of care and the associated costs which the City applies to its flood protection facility.

Reports by the City of Winnipeg and the University of Manitoba

A questionnaire was sent to the City and to the University requesting information for the purpose of preparing this report. A copy of the request and questionnaire is included in Appendix B. The replies to the questionnaire, included in Appendix C, indicate that inspections were carried out, no unusual conditions were encountered and no unusual maintenance was required. All facilities appear to be in satisfactory condition.

Operation Of Pumping Stations And Gates

During the 1986 spring flows, sixteen permanent pumping stations and six temporary stations were activated. Details are included in the City report in Appendix C.

Additional Works Constructed

A flood control structure featuring gates and provision for temporary pumping was constructed on the St. Mary's Road land drainage sewer. A dyke and gate chamber were also completed at the Rivergrove Development.

Recommendations

It is recommended that:

1. City of Winnipeg complete their study of the revision and extension of the line of flood defence as soon as possible.

2. The City and the provincial Department of Natural Resources consider holding an Extreme Flood Workshop.

3. That the Dyking Authority Act be revised as appropriate.

THIRTY-FOURTH ANNUAL REPORT

APPENDIX A

CITY OF WINNIPEG MAP - SHOWING DISTRICT BOUNDARIES, FLOOD DEFENCE LINES AND PUMPING STATION LOCATIONS.

NORTH KILDONAN

EAST KILDONAN

WINNIPEG

ST BONIFACE

ST VITAL

JAMES AVE. PUMPING STN.

WEST END

WINNIPEG

JAMES

TUXEDO

TUXEDO

GARRY

OKAL AIRPORT

4

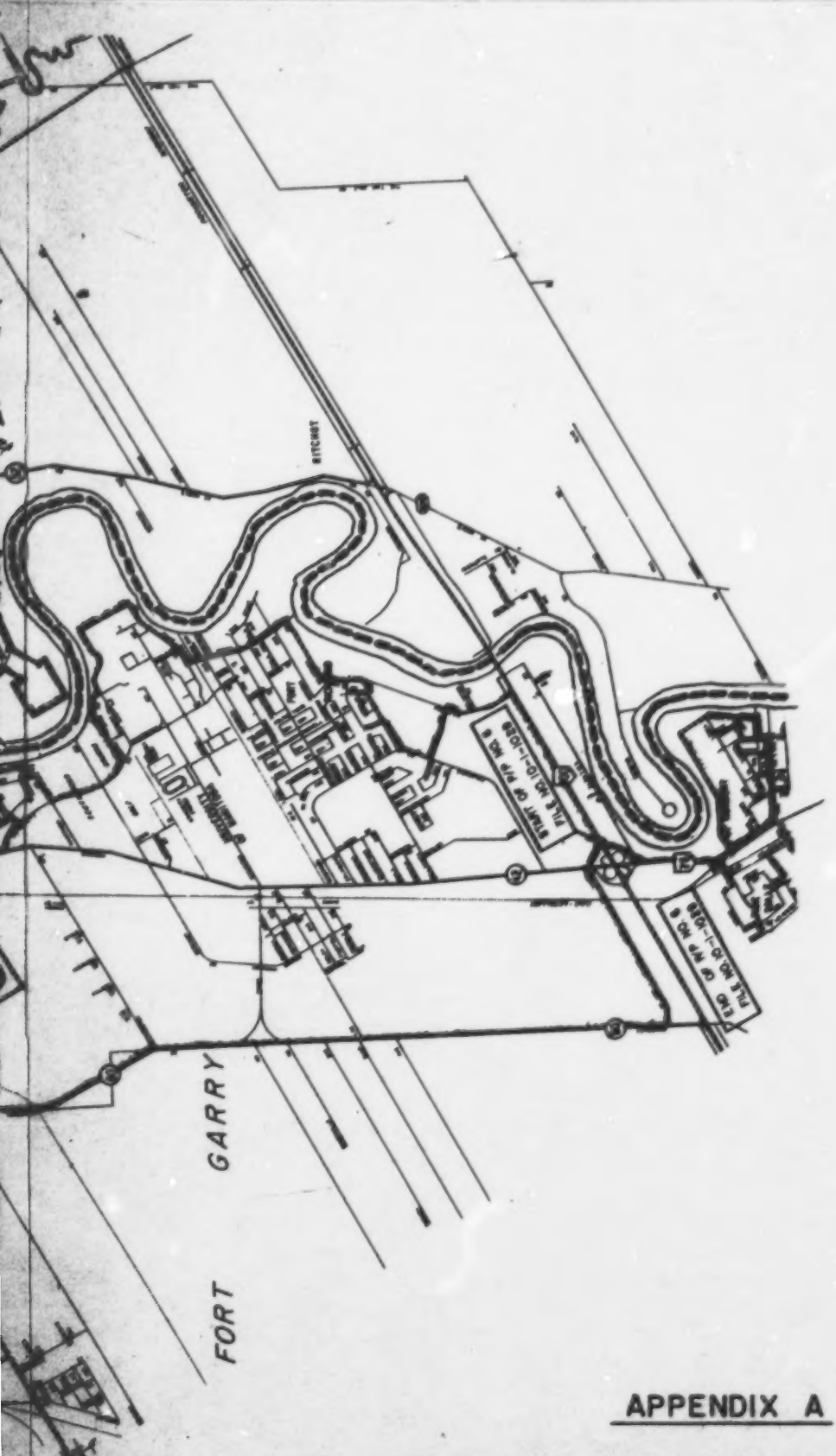
3

5

1

2

9



APPENDIX A

CITY OF WINNIPEG MAP SHOWING DISTRICT BOUNDARIES,
FLOOD DEFENCE LINES AND PUMPING STATION LOCATIONS.

FILE NO. 10-1-1039 C

THIRTY-FOURTH ANNUAL REPORT

APPENDIX B

COPY OF QUESTIONNAIRE SENT TO:

THE CITY OF WINNIPEG
THE UNIVERSITY OF MANITOBA

Manitoba

Natural Resources

Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

December 19, 1986

File: 11.1.5

Director of Waterworks, Waste
and Disposal Department
1500 Plessis Road
Box 178 Transcona P.O.
Winnipeg, Manitoba
R3C 2Z9

Dear Sir:

Re: Dyking Commissioner's 1986 Annual Report

The Dyking Authority Act, Section 15, requires that:

> "The commissioner shall, before the first day of April in each year, make to the minister a report on the administration and carrying out of the provisions of this Act during the year ending on the thirty-first day of December next preceding the making of the report, and on the condition of the dykes, pumping stations, and pumps, and their sufficiency for the purposes for which they were constructed or installed."

To assist me in making this report I request that you supply me with a report on the dyking system and pumping stations under your jurisdiction by 1987 02 28. For convenience, I am including a standard questionnaire similar to that used in previous years.

I would also request a report on what action has been taken on the recommendations in the 1985 report.

Yours truly,

ORIGINAL SIGNED BY:
F. PENNER

F. Penner, P. Eng.
Dyking Commissioner

Attachment

FP:spr

QUESTIONNAIRE FOR THE ANNUAL REPORT ON THE PRIMARY DYKING SYSTEM WITHIN THE CITY OF WINNIPEG

1. For The Reporting Year

Please provide information concerning:

a) Difficulties and problems encountered,

b) Maintenance and repairs carried out,

c) New Sewer Outfall Gate Structures constructed,

d) Improvements and modifications carried out.

2. Proposed Plans For Future

Please provide information concerning proposed new structures, modifications to existing structures, and proposed improvements or additions to the dyking system. Also note any evaluation studies completed or underway in connection with the "Primary Dyking System".

Further, in view of the apparent and river bank stability problems, please provide information in regard to:

a) Evaluation of river bank stability in critical areas.

b) Monitoring of erosion of river banks in critical areas.

c) Any remedial works undertaken or completed in the reporting year.

3. Availability And Location Of Proposed Borrow Pits

Indicate changes if any in availability and location of proposed borrow pits in the reporting year.

Manitoba

Natural Resources

Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

December 19, 1986

File: 11.1.5

Vice-President (Administration)
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

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Yours truly,

ORIGINAL SIGNED BY:
F. PENNER

F. Penner, P. Eng.
Dyking Commissioner

Attachment

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3. Availability And Location Of Proposed Borrow Pits

Indicate changes if any in availability and location of proposed borrow pits in the reporting year.

THIRTY-FOURTH ANNUAL REPORT

APPENDIX C

REPLIES TO THE QUESTIONNAIRE IN APPENDIX B
FROM
THE CITY OF WINNIPEG
AND
THE UNIVERSITY OF MANITOBA

THE CITY OF WINNIPEG
WATERWORKS, WASTE, AND DISPOSAL DEPARTMENT
1500 PLESSIS ROAD • BOX 178 TRANSCONA P.O. • WINNIPEG • MANITOBA • R2C 2Z9

IN REPLY PLEASE REFER TO

1987 04 02

Manitoba Department of Natural Resources
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

Attention: Mr. F. Penner, P. Eng.
Dyking Commissioner

Dear Sir:

Re: Dyking Commissioner's 1986 Annual Report
Our File No. RF-1

In reply to your letter of December 19, 1986, please find attached the 1986 Flood Control Reports of the Waterworks, Waste and Disposal Department, the Operations Department, and the Streets and Transportation Department, with regard to Flood Pumping Stations and the Dyking System within the City of Winnipeg.

We look forward to receiving ten copies of your report when completed.

Yours truly,

W.D. Carroll
Director

PEAL/hl
Attachment

WINNIPEG
..where the New West begins.

THE CITY OF WINNIPEG

WATERWORKS, WASTE AND DISPOSAL DEPARTMENT

FLOOD CONTROL REPORT

1986

The City of Winnipeg, Waterworks, Waste and Disposal Department is responsible for the Primary Dyking System and the flood pumping stations within the City of Winnipeg. The following report summarizes the operation of these facilities for the 1986 calendar year.

Throughout 1986, all flood pumping stations were inspected once per week by the Collection System crews of the Waterworks, Waste and Disposal Department. All stations were checked for temperature, basement flooding and vandalism. All problems were repaired as soon as possible.

Commencing in the month of March, all stations were given a complete maintenance check to ensure that these facilities were ready for operation when required. This annual servicing includes:

i) lubricating and operating all positive gates on sanitary, storm and combined sewers;

ii) inspection of all wet well floats;

iii) lubricating and operating of all pumps and equipment within the station;

iv) inspection of all electrical main boxes, starter boxes and motors;

v) inspection of all high voltage transformers and equipment;

vi) inspection of automated control system, where installed.

The Red River experienced two peaks in the spring of 1986, the first peak of 5.61 m above city (James Ave.) datum on March 31st and a second peak of 5.03 m above city datum on May 8th. The river receded to normal summer level by June 7th and flood control operations were discontinued. Under these conditions it was necessary to activate 16 permanent flood pumping stations and 6 temporary flood pumping stations as well as closing 19 positive gates. Another eight outfalls were protected by flap gates. A summary of the 1986 flood control record is attached. During the period that the river was in flood stage, staff from the Waterworks, Waste and Disposal Department were assigned to shifts providing 24 hour coverage for all Collection System and Flood Control works.

During the months of October and November, all flood pumping stations were winterized in conjunction with the routine weekly checks. The number of flood stations which have been automated remains at sixteen.

The Waterworks, Waste and Disposal Department in conjunction with the six districts of the Operations Department have continued in their efforts to upgrade the information provided in the Flood Control Manual. This information was assembled in an addendum form for use in 1986 and it is anticipated that the entire manual will be completely revised in 1987.

Other 1986 issues pertinent to flood control include:

1.0 Extensions and Redesignations of the Primary Line of Flood Defense (PLD) :

.1 Extension of the Primary Line of Defence to the South - District 5 (St. Vital):

The Dyking Commissioner has reviewed and provided comments to redesignation plans for the extension of the St. Mary's Road and St. Anne's Road PLD south to the Floodway and the removal of the designation from Vista Avenue. In 1986, a flood control structure featuring flap and positive gates and provision for temporary pumping was constructed on the St. Mary's Road land drainage sewer at Vermette Place, to isolate a 300 ha lake system from the land drainage trunk during high river levels. The City's "...Flood Pumping Stations..." manual was accordingly updated with Activation Level set at

229.51 m (site) geodetic, and the structure will be included in the redesignation application to the Commissioner. A further revision to the application will be necessitated by the construction completion in 1986 and approval-in-principle by the Dyking Commissioner of a Primary Dyke on the Normand Park peninsula, which extension protects 117 residential lots.

.2 Redesignation of River road PLD and Red River Floodway - District 5:

An application for a 50 acre residential subdivision (DASZ 41/86) is currently active, for which zoning was approved in 1986 subject to redesignation of the floodway south of Route 165 to the St. Amant institution. The City produced a procedural to ensure that the redesignation process would be consistent with the City of Winnipeg Act, obtained concurrence from the Manitoba Water Resources Branch, and communicated the procedural to the Developer. Construction is expected in 1987.

.3 Redesignation of Rue Archibald PLD - District 5:

The City's 1986 Capital Estimates included funds for the restoration of Evans Street and the

stabilization of the adjacent Seine riverbank. This will provide the opportunity to designate Evans as the PLD, thereby adding flood protection to 200 - 300 existing homes between Archibald (the present PLD), and the Seine River.

.4 Redesignation of PLD and floodway fringe - District 6 (Ft. Garry):

A developer approached the City with a proposal to extend the existing dyke east of Plaza Drive (which has been approved in principle by the Dyking Commissioner, but has not been submitted by the City for formal redesignation to date), northward to Adamar Road, in conjunction with the development of an RM-3 zoned parcel. Application for the Dyking Commissioner's approval in principle and construction are expected in 1987. The parcel is in the Floodway but was zoned prior to 1978, therefore floodway fringe regulations apply (Manitoba Regulation 9/85).

.5 Redesignation of PLD and Floodway Fringe - District 3 (West Kildonan), Rivergrove Development:

Flood protection works (dyke and gate chamber) have been completed and building permits are to be

released subject to completion inspections and securing of caveats to protect the City's interests in the dyke and to provide access. Formal application for designation will follow, subject to correction of deficiencies, supply of mobile pump, and asbuilt drawings. The gate structure and associated activation level has been added to the City's "...Flood Pumping Stations..." manual. (226.7 m geodetic site).

.6 Kildonan Drive/Bergen Cut-off Dyke - District 4:

A developer approached the City with a proposal to re-develop land presently occupied by the CPR Bergen R.O.W., which will require a redesignation of the PLD. This may provide an opportunity to extend the PLD northward to Whellam's Lane and Henderson Highway, thereby adding in excess of 150 existing dwellings to the City's flood protection system.

2.0 Turnbull Drive Dyke, District 6 - 768 Association:

Further to the City's 1984 Flood Control Report, a Letter of Understanding outlining the responsibilities of both parties and the extent of the services which the City shall provide was sent to the Association's solicitors for execution.

3.0 Flood Pumping Station Capacities:

Further to the 1985 Report, the City has completed a "Regional Flood Protection Flood Pumping Stations - Upgrading Requirements" report which recommends operational changes, capital improvements, and a 3-Phase implementation process with associated estimated costs for the City's flood pumping stations. The report priorizes the proposed improvements while considering the City's long term Basement Flooding Relief Program, which priorizes distribution system improvements on the basis of susceptibility to basement flooding due to severe summer rainstorms. Annual capital funding has accordingly been included in the City's 5 Year Capital Program for flood pumping station upgrading.

4.0 Manitoba Regulation 9/85 Revision:

Further to an initiative by the Water Resources Branch to update and amend Regulation 9/85 (Floodproofing Criteria), the City provided its comments to the proposed revisions and recommended further revisions to the existing Regulation.

With the new revision, the Province intends to facilitate the development of basements within the Designated Floodway Fringe, which is currently restricted. The City has expressed concern in its comments to the proposed revision, that this will add incentive for developers to floodproof individual dwellings in the fringe, instead of extending the City's Primary Line of (Flood)

Defence to include these dwellings in the City's flood defence system, as favored by the City. This issue, which was first expressed in the City's 1984 Report, should be addressed with the Province in 1987.

5.0 Primary Line of Defence Mapping:

The City has initiated a project to produce plan/profile maps of the City's 115 km of primary dykes on aerial photo bases. Over 100 - "A1" drawings at 1:2000 scale will be produced. The drawings will update plans/profiles produced by the Provincial Water Control and Conservation Branch in 1967 in a modern, revisable format. The drawings will identify deficiencies in the dyking system and areas where the dyke must be realigned to keep pace with development. Preliminary engineering requirements, will be identified to address the deficiencies and capital works will be recommended, to be funded from the City's Regional Flood Protection account.

6.0 Extreme Flood Workshop:

Several meetings were held with the Dyking Commissioner in 1986, at which the subject proposal introduced in his 1985 Annual Report was discussed, among other things.

At the meeting of September 24, 1986, the City agreed to recommend to the Board of Commissioners, the assembly of a steering

committee with representation from the Province and several City departments, which would report to the Dyking Commissioner. The committee's objectives would be to recommend objectives, format, resources and participants, and set a target date for the workshop.

7.0 Secondary Dyke Pamphlet:

Further to a Council Adopted report from the Committee on Works and Operations recommending the distribution of an information package to property owners protected from high river levels by secondary dykes, the City has produced a pamphlet titled "The Dyke Behind Your Home is Your Friend". The pamphlet, currently under review, provides the following:

.1 Information on the functional relationships of the Secondary/Primary Dyking Systems.

.2 Incentive for the property owner not to remove or modify the secondary dyke by explaining that such removal would result in the reduction of flood protection to his property and increased flood fighting costs to the City.

.3 A channel for individuals to obtain further information regarding their personal flood defense situations.

The pamphlet is expected to be sent out to the property owners in 1987.

8.0 Floodway Operations Rules:

At the April 11, 1986 meeting with the Dyking Commissioner, it was indicated that the rules concerning the Manitoba Water Resources Branch's operation of the Red River Floodway had been approved, and that the City would be sent a copy.

The Floodway system, which is operated by the Province and is the major component of the City's flood defence system, directly impacts the City's operation of its internal flood control systems (ie. pumping stations, gate structures, dykes, etc.) during spring runoff.

For example, in 1986, river levels within the City were approximately the same as the 1979 flood levels, while flow and levels upstream of the floodway gates were considerably less than those in 1979. These high levels within the City increase the risk of sustaining flood damages and incur additional operational costs to the City. Therefore, the City would emphasize it's continued interest in obtaining a copy of the approved rules.

PEAL:DGG/hl

1987 04 02

FLOOD CONTROL RECORD

TABLE 1

MARCH, APRIL, MAY 1986

STATION	GATE	STATION ACTIVATED	GATE CLOSED	TIME	DATE	RED RIVER ELEVATION CITY DATUM (FEET)
Metcalfe		X	X	15:00	86 03 26	6.9
LaVerendrye		X	X	17:15	86 03 26	6.9
Despins		X		10:00	86 03 27	8.4
	Armstrong Crossover		Gate Opened	11:00	86 03 27	8.6
	Fort Rouge Park		X	14:00	86 03 27	9.0
Marion			Cover on			
		X	Overflow	22:30	86 03 27	9.8
	Ruby		X	20:30	86 03 28	11.8
	Aubrey Storm		X	21:45	86 03 28	11.8
Jefferson		X	X	08:30	86 03 29	13.7
Newton		X	X	09:30	86 03 29	13.7
Baltimore		X	X	10:30	86 03 29	13.7
	Renfrew		X	10:30	86 03 29	13.7
	McDermot		X	11:30	86 03 29	13.8
Mager Dr.		X		08:40	86 03 29	13.8
Cockburn		X		09:15	86 03 29	13.8
	Eccles		X	10:55	86 03 29	13.8
	Lombard		X	11:35	86 03 29	13.8
Baltimore		X	X	18:15	86 04 30	13.8
Bannatyne		X	X	19:30	86 04 30	13.8
	McDermot		X	19:30	86 04 30	13.8
	Lombard		X	20:15	86 04 30	13.9
	Litz		X	12:00	86 03 29	13.9
Bannatyne		X	X	14:00	86 03 29	14.0
Syndicate		X		14:15	86 03 29	14.0
	Spence		X	12:55	86 03 29	14.0
	Canora		X	13:20	86 03 29	14.0
	Burrows		X	22:00	86 04 30	14.0
Turnbull Dr.			X	15:00	86 03 29	14.2
Archibald U.P.		X	X	15:00	86 03 29	14.2
Linden		X	X	15:30	86 03 29	14.3
Linden		X	X	10:00	86 05 01	14.9
	Spence		X	10:45	86 05 01	14.9
	Canora		X	11:30	86 05 01	14.9
	Deer Lodge(2)		X	19:30	86 03 29	15.1
Boyle		X	X	22:00	86 03 29	15.4
Dumoulin		X	X	21:45	86 03 29	15.4
Galt		X	X	22:45	86 03 29	15.6
	Ferry Rd.		X	24:00	86 03 29	15.6
Galt		X	X	13:30	86 05 02	15.8
Boyle		X	X	11:15	86 05 02	15.8
Hart		X	X	09:45	86 05 02	15.8
Dumoulin		X		14:30	86 05 02	15.8

FLOOD CONTROL RECORD - TABLE 1 CONT'D.

STATION	GATE	STATION ACTIVATED	GATE CLOSED	TIME	DATE	RED RIVER ELEVATION CITY DATUM (FEET)
Ash		X		17:30	86 05 02	15.8
	Douglas Pk.		X	10:00	86 05 02	15.8
	Douglas Pk.		X	00:30	86 03 30	16.1
Assiniboine		X	X	11:20	86 04 10	16.2
	Burrows		X	17:00	86 04 08	16.3
	Donald		X	10:15	86 03 30	16.6
Colony		X	X	17:15	86 03 30	16.6
Polson		X	X	12:45	86 03 30	16.7
Assiniboine		X	X	14:45	86 03 30	17.0
River		X	X	15:15	86 03 30	17.0
	Water Ave.		X			
			Open Inter connection	14:00	86 03 30	17.0
Ash		X	X	18:00	86 03 31	18.0
	Maryland		X	09:45	86 04 01	18.0

PR/gk
1987 04 01

FLOOD CONTROL RECORD

TABLE 2

March, April, May 1986

STATION	GATE	STATION DEACTIVATED	GATE OPENED	TIME	DATE	RED RIVER ELEVATION CITY DATUM (FEET)
Assiniboine			X	09:15	86 04 21	13.1
	McDermot		X	10:15	86 05 20	13.1
	Lombard		X	10:45	86 05 20	13.1
	Burrows		X	11:35	86 05 20	13.1
Ash			X	21:00	86 04 18	12.4
Metcalfe		X	X	14:00	86 05 23	12.2
Jefferson		X	X	09:30	86 05 23	12.2
	Litz		X	10:30	86 05 23	12.2
Ash			X	13:30	86 05 22	12.0
	Ruby		X	11:00	86 05 26	11.1
	Aubrey Storm		X	10:00	86 05 26	11.1
ArchibaldU.P.		X	X	14:00	86 05 29	9.4
	Maryland		X	09:00	86 04 30	9.0
Bannatyne		X	X	09:30	86 05 16	14.2
Linden		X	X	10:15	86 05 16	14.2
	Spence		X	11:00	86 05 16	14.2
	Canora		X	11:30	86 05 16	14.2
	Canora		X	09:35	86 04 18	14.1
Linden		X	X	11:20	86 04 18	14.0
	Spence		X	10:25	86 04 18	14.0
	McDermot		X	16:00	86 04 19	13.4
Bannatyne			X	15:30	86 04 19	13.4
Baltimore		X	X	16:00	86 04 19	13.4
	Eccles		X	14:30	86 04 19	13.4
	Lombard		X	14:35	86 04 19	13.4
	Douglas Pk.		X	17:15	86 04 19	13.4
Newton		X	X	11:00	86 05 20	13.1
	Deer Lodge		X	16:30	86 03 30	17.0
Assiniboine		X	X	09:00	86 04 04	16.9
River		X	X	09:30	86 04 04	16.9
Colony		X	X	10:00	86 04 04	16.9
Dumoulin		X	X	11:15	86 04 10	16.2
	Donald		X	10:30	86 04 07	16.1
Polson		X	X	09:30	86 04 07	16.1
	Water		X Closed Inter-connection	13:00	86 04 07	16.1
Boyle			X	10:30	86 05 12	15.5
Galt		X	X	13:30	86 05 14	15.2
Boyle		X	X	09:20	86 04 16	15.0
Galt		X	X	10:00	86 04 16	15.0
	Ferry Rd.		X	11:15	86 04 16	15.0
Turnbull Dr.			X	09:00	86 05 15	14.7

STATION	GATE	STATION DEACTIVATED	GATE OPENED	TIME	DATE	RED RIVER ELEVATION CITY DATUM (FEET)
St. Norbert			X	10:00	86 05 30	9.0
	Ft. Rouge Pk.		X	14:00	86 05 30	8.9
	Armstrong Crossover		Gate Closed	10:30	86 06 06	7.7
Mager Dr.		X		14:00	86 06 05	7.7
Cockburn		X		09:00	86 06 06	7.7
Despins		X		13:00	86 06 06	7.7
	Renfrew		X	12:30	86 06 05	7.7
Marion		X	Overflow Cover Removed	08:00	86 06 06	7.7
Syndicate		X		12:15	86 06 06	7.7
Hart		X	X	12:30	86 06 04	7.4
LaVerendrye		X	X	14:20	86 06 07	7.1
Baltimore		X	X	13.35	86 06 05	7.0

FORM 5

THE CITY OF WINNIPEG

FILE: SG-11

INTER-OFFICE MEMORANDUM

To: Mr. P. Lagasse, P. Eng.
Waterworks, Waste and Disposal Department

RECEIVED WATERWORKS JAN 33 10 14 AM '87

From: E.W.J. Clarke, P. Eng.
Director of Streets and Transportation

Re: RF-1

Date: 1987 01 26

RE: DYKING COMMISSIONER'S 1986 ANNUAL REPORT

The Streets and Transportation Department undertook no remedial riverbank erosion or stability works in 1986.

Erosion at the following locations was visually inspected and addressed or noted.

Lyndale Drive Park	- erosion inspected as a result of complaints received from public and Rivers and Streams Committee, report on conditions forwarded to Commissioner of Works and Operations.
Glasgow Ave. Street End	- damage to City-owned riverbank property as a result of stabilization works undertaken by owner of 408 Glasgow Ave. Damage inspected and matter referred to Rivers and Streams Committee for action.
Carriere Ave. Street End	- inspection of additional bank failure and movement of apartment block's parking pad.
Dominion Street End	- geotechnical report received from Consultant and reviewed. Recommendation on action to be taken (if any) to be referred to Board of Commissioners early in 1987.
Granite Curling Club	- Consultant assigned to prepare geotechnical report on riverbank movement. City to report to Rivers and Streams Committee by August 1987 on intended remedial action.

E.W.J. Clarke

GAK/cjc

FORM 3

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

PL

RECEIVED
WATERWORKS
MAR 2 10 21 AM '87

To: Mr. P. Lagasse, P. Eng.
Waterworks, Waste &
Disposal Department

From: G.K. Stewart, P. Eng.
Director of Operations

Re: (Our File No. G 24-0-0)

Date: February 25, 1987

Re: Dyking Commissioner's 1986 Annual Report
Your File No: RF-1
Our File No: G-24-0-0

Further to your memorandum of January 9, 1987 with regards to the above mentioned subject, please find enclosed the responses for the Operations Department, received from Districts 1 through 6 inclusive.

G.K. Stewart, P. Eng.
Director of Operations

cc: D.A. Ross

Attach.

REP/mj

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

TO: R. Phillips
Operations Department
820 Elgin Avenue

FROM: G. A. Pekrul, C.E.T.
Supervisor of Technical
Services - District 1

FILE:

DATE: 1987 02 20

Re: Dyking Commissioners 1986 Annual Report

The following is the District 1 reply to the questionnaire for the annual report on the Primary Dyking System for the 1986 Calendar year.

1. a) No difficulties were encountered.

   b) Modifications to the Clifton Street and Cornish Avenue Outfalls to the Assiniboine River took place with repairs to pipes, bank regrading and placement of grouted rip-rap. Landscaping will be completed in 1987.

   c) No new sewer outfall gate structures were constructed.

   d) No improvements or modifications carried out.

2. a) A monitoring program was set up to study the bank stability along Churchill Drive east of Hay Avenue.

   b) Bank stability problems were noted on the Red River at the end of Glasgow Avenue were a sewer outfall pipe separated due to bank movement. The pipe repair and minor bank regrading will be undertaken in 1987.

   c) The River Avenue Outfall to the Assiniboine River will be reconstructed in 1987.

3. There is no location within District 1 that could be used as borrow pit.

G. A. Pekrul, C.E.T.

GAP/bf

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

TO: Russ Phillips,
A/Administrative
Assistant.

FROM: S. Winch, C.E.T.,
Technical Supervisor,
District #2 Operations.

RE: Dyking Commissioners
1986 Annual Report

DATE: January 19, 1987

The following is in reply to Mr. Corkal's memo of January 14, 1987.

1. **For 1986 Calendar Year**

   a) There were no problems or difficulties encountered.

   b) Maintenance work was started on the Olive St. Outfall.

   c) No new outfalls were constructed.

   d) No improvements or modifications were made.

2. **Proposed Plans for Future**

   Funds for remedial work to the Raquette St. and St. Charles outfall have been included in the 1987 Capital Estimates.

3. **Availability and Location of Proposed Borrow Pits**

   Borrow material is available from the District 2 Landfill Site and other City property and for projects (excess material from excavations).

R.E. Phillips

for S. Winch, C.E.T.,
Technical Supervisor,
District #2 Operations.

SW/hs

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

TO: Mr. R. Phillips,
A/Administrative Assistant

FROM: Mr. M.J. Winkler, C.E.T.,
Technical Supervisor

RE:

DATE: 1987 02 23

Re: Dyking Commissioner's Annual Report - 1986

Attached is the District's submission of the above referenced information.

Original Signed: "M. J. Winkler"

M. J. Winkler, C.E.T.,
Technical Supervisor

MJW/jos
Attch.

QUESTIONNAIRE FOR THE ANNUAL REPORT ON THE PRIMARY DYKING SYSTEM WITHIN THE CITY OF WINNIPEG

1. For The Reporting Year - 1986

a) Difficulties and problems encountered:

NIL

b) Maintenance repairs carried out:

Normal maintenance and repair works carried out on roadways on the surface of the dyke.

c) New Sewer Outfall Gate Structures constructed:

NIL

d) Improvements and modifications carried out:

NIL

2. Proposed Plans for Future

With regard to apparent erosion and riverbank stability problems:

a) The evaluation inspections of riverbank stability in critical areas carried out by District #3 in 1984 were reviewed in 1986, with the following conditions still being of concern:

Syndicate Street Outfall
- Gully in front of most southerly outfall pipe - 42" diameter; North pipe - okay

Burrows Avenue Outfall
- Gully in front of outfall pipe

Jefferson Avenue Outfall
- Gully in front of outfall pipe. Rip-Rap commencing to fall apart.

Newton Avenue Outfall
- Replacement of approximately 30m badly cracked concrete pipe required
- Rip-Rap repair works required

Armstrong Avenue Outfall
- Gully in front of outfall pipe - Rip-Rap falling apart.

A District No. 3 submission for remedial works for the Newton Avenue Outfall is included in the 1987 Capital estimates.

2. Proposed Plans For Future - Continued

b) Monitoring of erosion of riverbanks in critical areas:

- No monitoring carried out in 1986

c) Remedial works undertaken and completed in 1986:

- No remedial works undertaken or completed in 1986

3. Availability and Location of Proposed Borrow Pits

No change in availability and location of proposed borrow pits in 1986.

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

TO: G. K. Stewart, P. Eng.
Director of Operations

FROM: S. Dolhun, P. Eng.
District Engineer
District No. 4 Operations

RE: File No. S-40-10-02

DATE: 1987 02 16

RE: PRIMARY DYKING SYSTEM - DISTRICT NO. 4
1986 ANNUAL REPORT

1. For 1986 Calendar Year

a) No difficulties or problems encountered.

Repairs to the 2500 mm c.m.p. outfall on the Munroe Trunk Sewer were deferred to 1987.

b) Normal maintenance and repairs were carried out.

c) No improvements or modifications carried out in 1986.

2. Proposed Plans for Future

a) The District does not evaluate river bank stability. Any suspected problems are directed to the Streets and Transportation Department.

b) Monitoring of erosion by the District is done primarily at outfalls as part of normal sewer maintenance inspections.

c) No remedial works were undertaken in 1986.

3. Availability and Location of Proposed Borrow Pits

No change in 1986.

"S. DOLHUN"

S. Dolhun, P. Eng.

BT/sm

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

TO: MR. R. PHILLIPS,
A/Administrative Assistant,
Operations Department.

FROM: MR. P. KOWALYK, P. Eng.,
District Engineer,
District #5.

DATE: 1987 02 19

RE: QUESTIONNAIRE FOR THE ANNUAL REPORT ON THE PRIMARY DYKING SYSTEM WITHIN THE CITY OF WINNIPEG - DISTRICT #5.

As requested, we are submitting our annual report on the Primary Dyking System within District #5.

"Original Signed by:"
MR. P. KOWALYK, P. Eng.
District Engineer,
District #5.

PK/ll
Encl.

DISTRICT #5

PRIMARY DYKING SYSTEM QUESTIONNAIRE

I. FOR 1986 CALENDAR YEAR:

Item (a): No difficulties were encountered.

Item (b): All culverts were inspected within the dyking system. Maintenance of isolated portions were carried out on an as-required basis.

Item (c): i) A new land drainage sewer outfall to the Seine River was constructed at St. Anne's Road and Southglen Boulevard.

ii) A new outfall gate chamber was constructed at Burland and St. Mary's Road. This is the outlet of the River Park South System into the Britannica trunk.

Item (d): A primary dyke was constructed around the Normand Park Development to approved designs.

II. PROPOSED PLANS FOR FUTURE:

Item (a): Evaluation of riverbank stability in critical areas:

i) Acquisition of property on Evans Street at the Seine River is planned. (No approval for 1987).

Item (b): Monitoring of erosion of riverbanks in critical areas:

No monitoring was carried out by District forces in 1986.

Item (c): Remedial works undertaken or completed in 1986:

i) No remedial works were undertaken in 1986.

ii) Remedial work will be carried out in 1987 at the following locations:
a) Dunkirk Drive/Kenwood Place Outfall
b) Dunkirk Drive/Canoe Club Outfall
c) Dumoulin/Tache Outfall

iii) A new primary dyke is proposed and will be constructed in 1987 West of River Road between the St. Amant Centre and Blackmore Avenue.

III. AVAILABILITY AND LOCATION OF PROPOSED BORROW PITS:

Proposed borrow pits are the same locations as identified in previous years:

- Whittier Park
- Area North of C.N.R. Highline
- Provencher East Area/nominal
- River Road

THE CITY OF WINNIPEG

INTER-OFFICE MEMORANDUM

TO: Mr. R. Phillips
Administrative Assistant
Operations Department

FROM: J. Friesen, P. Eng.
Asst. District Engineer
District 6

RE: PRIMARY DYKING SYSTEM
WITHIN THE CITY OF WINNIPEG
- DYKING COMMISSIONER'S
1986 ANNUAL REPORT

DATE: 1987 02 13

As requested in the Acting Director of Operations' memorandum of January 14, 1987, we submit our annual report on the primary dyking system within District 6.

I. FOR THE CALENDAR YEAR ENDING DECEMBER 31, 1986:

a) No problems or difficulties were encountered.

b) Normal maintenance and repairs were carried out.

c) A land drainage sewer was constructed on the west side of Pembina Highway from Grandmont Boulevard to the Beaujolais Coulee.

d) Modifications were made to the east-west culvert crossing under Pembina Highway at Grandmont Boulevard.

II. PROPOSED PLANS FOR THE FUTURE:

a) Reconstruction of the existing control structure at Somerset Avenue and Riverside Drive,and major repair work on the Somerset Avenue outfall and on the Harstone Road outfall are planned for 1987.

b) No new outfalls or gate structures are planned for 1987. No major work is planned on the primary dyke. Routine maintenance will be carried out.

c) No evaluation studies in connection with the "Primary Dyking System" are contemplated for the near future by this District.

d) No evaluations of riverbank stability in critical areas are planned by the District. Evaluation may, however, be undertaken by private interest groups in connection with proposed development.

II. PROPOSED PLANS FOR THE FUTURE (cont'd):

e) No remedial works on river banks were undertaken by the District in 1986. The District is not carrying out any program of monitoring erosion along the river banks, but will advise the Waterworks, Waste and Disposal Department if an erosion problem is discovered.

III. AVAILABILITY AND LOCATION OF PROPOSED BORROW PITS:

Following is a list of borrow pit areas which, with the exception of the area described in (1), lie inside the primary dyking system and should be accessible at river levels reached in 1950. Actual quantities of borrow pits are not known; however, sites are sufficiently large that adequate material should be available:

1) North-east corner of Oakenwald Avenue and North Drive;

2) Park area adjacent to South Drive between Kebir Place and Holly Avenue;

3) Oakenwald School Grounds - westerly extremity of Manchester Boulevard North and South;

4) River Lots 17 and 18 east of Waverley Street and north of Lot 16 Drain;

5) Waverley Street from De Vos Road to Bison Drive -- large open tracts of land on either side of Waverley Street.

"ORIGINAL SIGNED BY"

J. Friesen, P. Eng.

KMH/mes

THE UNIVERSITY OF MANITOBA

OFFICE OF THE PRESIDENT

Winnipeg, Manitoba
Canada R3T 2N2

February 19, 1987

Mr. F. Penner, P. Eng.
Dyking Commissioner
Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

Dear Mr. Penner:

Re: Dyking Commissioner's 1986 Annual Report
Your File No. 11.1.5

With respect to your request of December 19, 1986, the following response will provide the information that you require from the University of Manitoba to prepare the Dyking Commissioner's 1986 Annual Report:

(1) 1986 Calendar Year:

(a) Difficulties and problems encountered: None

(b) Maintenance and repairs carried out: Routine only, valve, bearings and all electric motors were checked for satisfactory operation.

(c) New sewer outfall gate constructed: None

(d) Improvements and modifications carried out: Backfilling work was carried out around the newly completed Geological Sciences (Wallace) Building.

(2) Proposed Plans for the Future:

The two foot high earth dyke round the east, south and west side of the old Water Works Building will not be constructed as indicated in last year's report. Oil levels inside old Water Works Buildings tanks have been lowered below surrounding building ground elevation. Oil will be removed as required and no future oil deliveries will be accepted for old Water Works storage tank filling.

Bank Stability:

At present, no evaluation studies are under way in connection with the "Primary Dyking" system. The most critical areas of the river bank are located on the south side of the Campus adjacent to McLean Crescent and on the north side at the new Geological Sciences (Wallace) Building.

Bank slippage in the southerly area has been reviewed at several intervals throughout 1986 and normal material movement of less than 5 centimeters was observed.

The bank adjacent to the Geological Sciences (Wallace) Building construction site was monitored by the University of Manitoba Faculty of Engineering which will be continued for many years. No unusual bank slippage has been detected.

Minor backfilling work around the Geological Sciences Building has taken place during 1986.

(3) Availability and Location of Proposed Borrow Pits:

No changes are suggested in the availability or location of proposed borrow pit for 1987.

If you require any further information in this regard, please do not hesitate to contact me.

Sincerely,

T. G. Falconer
Vice-President (Administration)

TGF:jl

c.c. W. R. Wall
H. Frank